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The effects of New Cooperative Medicine Scheme coverage on health outcomes and health care in rural China

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Introduction

Who: Rural population in China.

What: Health insurance program: the New Cooperative Medicine Scheme (NCMS).

Why: To estimate the effects of NCMS on health outcomes and health care.

History:

- Between the early 1950s and 1978, the now defunct Cooperative Medicine Scheme was in effect, covering 90% of the rural population in China in 1976.
- As of 2003, more than 87% of the rural population in China was without health insurance.
- The government established the NCMS in 2003, with the goal of achieving 100% coverage by 2011. By September 2009 , the new scheme has reached 94% of the rural residents in China, covering a total of 833 million enrollees.
- However, the NCMS does require large deductibles, low ceilings, and high coinsurance rates.

Literature:

There are only few empirical studies estimating the causal effect between the NCMS and health outcomes. Results of those studies tend to be inconsistent. Further, those studies haven't pay sufficient attention to the control of unobservable variables.

Hypothesis:

The coverage of NCMS should make health care more available, more affordable, and thus should improve health outcomes.

How: We apply the triple difference method to data from three survey periods, combining with regression analysis.

Data

Source:

China Health and Nutrition Survey, 2000, 2004, 2006

Subject:

rural residents 18-60 years old

Treated Group:

consisting of participants of the NCMS during 2004-2006

Two Control Groups:

- (1) Non-participant Group
consisting of individuals residing in the counties covered by the NCMS but choosing not to participate
- (2) Non-exposed Group
consisting of individuals not residing in the counties covered by the NCMS and thus didn't have the chance to participate

Results

Effects on Health Outcome	Good Self-assessed Health	Under Weight	Normal Weight	Overweight	Have Been Sick or Injured During the Past 4 Weeks	Have Difficulty Carrying Out Daily Activities due to Illness During the Past 3 Months
Treated Group (cf. Non-participant Group)	-0.004 (0.066)	-0.028 (0.035)	-0.009 (0.069)	-0.006 (0.063)	-0.054 (0.045)	-0.05 (0.036)
Treated Group (cf. Non-exposed Group)	0.064 (0.048)	0.031 (0.024)	-0.065 (0.051)	-0.053 (0.046)	-0.090*** (0.031)	-0.048* (0.025)

no effect

The NCMS has a significant effect on reducing sickness.

Effects on Health Care	Minutes to Hospital by Bikes	Waiting Time to be Seen by a Health Worker in the Facility	Flu Fee per Visit	Village Clinic	Private Clinic	Town Hospital	Country Hospital	City Hospital
Treated Group (cf. Non-participant Group)	-2.706* (1.57)	-2.484** (1.03)	10.511** (4.76)	0.001 (0.07)	-0.015 (0.06)	0.018 (0.03)	0.012 (0.02)	-0.039 (0.04)
Treated Group (cf. Non-exposed Group)	-2.475* (1.28)	-2.080** (0.92)	15.510*** (3.34)	-0.078 (0.05)	-0.003 (0.04)	0.018 (0.02)	0.004 (0.02)	0.058* (0.04)

The NCMS has the effect of reducing the distance to health care facilities.

The NCMS has a significant effect of reducing the waiting time inside a health care facility.

The NCMS significantly increases the price of health care services.

The NCMS increases the use of city level health care service facilities.

Effects on Health Care Expenses (by income groups)	Compared with the Non-participant Group		Compared with the Non-expose Group	
	All Expense	Outpatient Expenses	All Expense	Outpatient Expenses
Low Income Group	-891.432 (990.940)	-100.681 (282.979)	-260.136 (619.846)	39.921 (208.087)
Low & Middle Income Group	-202.87 (1805.319)	-170.031 (162.662)	-52.441 (1037.970)	-575.829** (245.410)
Middle & High Income Group	43.33 (1241.852)	289.774 (684.803)	-1750.674 (1747.158)	-692.24 (792.634)
High Income Group	331.243 (3411.630)	-468.503 (3673.441)	1797.062 (3021.812)	1179.879 (3245.599)

The NCMS significantly reduces the health care expenses of the low/middle income group patients;

But, it has no significant effects on the health care expenses of other income groups.

Conclusion

After controlling for the effects of unobservable variables in the triple difference model, the results on health outcomes and health care of the NCMS are found to be different from the previous estimates using the DID method or simply using the regression method.

The NCMS can

- increase the supply of health care services (via reducing distance to a facility and waiting time inside the facility),
- reduce sickness, and
- reduce health care expenses of the low/middle income rural residents.

However, the study finds that the NCMS

- has no effects on participants' self-assessment of feeling healthy,
- has the effect of increasing the price of health care services.

Limitation of the Study:

The data were collected only up to 2006, at which point the NCMS had only been implemented for a short period of time. More comprehensive results may be obtained if the data can be extended to reflect more recent development and usage of the program.

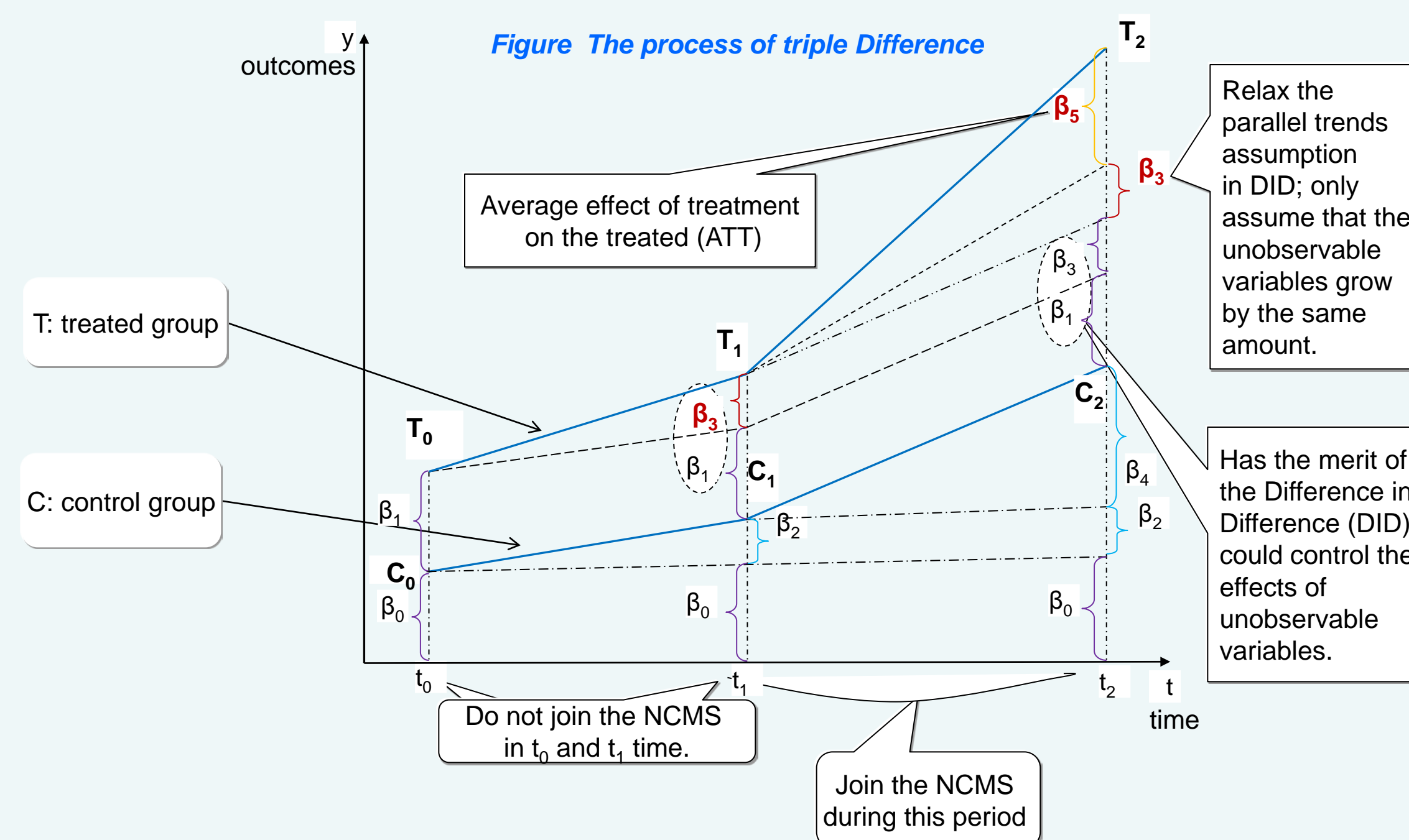
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Methods: Triple Difference Model



Definitions:

$$y_i^0 = m_0(X_i) + \theta_i + \varepsilon_i = m_0(X_i) + u_0$$

$$y_i^1 = m_1(X_i) + \theta_i + b_i + \varepsilon_i = m_1(X_i) + u_1$$

$$ATT(X) = E[y_i^1 - y_i^0 | X_i, C_i = 1] \\ = m_1(X_i) - m_0(X_i) + E[b_i | C_i = 1]$$

X :the observable variables,
 θ : an unobservable individual-specific term that affects the outcome whether or not the individual is covered.
b: an unobserved individual-specific gain to the individual being covered by the program

Method Merits:

It allows for essential heterogeneity (i.e. unobserved idiosyncratic returns)

It can release the parallel trends assumption in difference-in-difference method.

It does not require exclusion restrictions nor does it need assumptions on functional form.

It can be combined with the regression method for controlling unobservable variables.